A.A.A.S. BULLETIN

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The A.A.A.S. Bulletin

Every member of the American Association for the Advancement of Science will receive each month a new publication, of which this is the first issue. No formal subscription for it will be required of members of the Association, for its cost to them is included in their annual dues.

Broadly speaking, the purpose of the A.A.A.S. Bulletin is to advance science which, of course, is the purpose of all the activities of the Association. But the advancement of science has a continually expanding and changing meaning. When the Association was founded science was classified largely as "natural philosophy" and "natural history." Since that time science has been divided and subdivided into numerous special fields. There are now more than a thousand scientific organizations in the United States and Canada.

With the expansion of science the needs for increasing avenues of publication have led to the establishment of many special scientific journals. There has not been, however, corresponding increases in the number of journals for science in general, nor have those in existence been able to increase appreciably, if at all, the number of pages they print per year. This has been true of *Nature, Science* and *The Scientific American*. Obviously the needs of the Association for journals are much greater than they were thirty or forty years ago when it held only one meeting each year and had no divisions and fewer than half as many affiliated societies, and when its membership was only a fraction of its membership today.

As science becomes more and more specialized, it becomes increasingly important to maintain interconnections among its various fields. That this fact is realized by specialists in the fields of the natural sciences is proved by the numerous joint symposia of sections and societies that have been held at the meetings of the Association. But to specialists in these fields the social sciences, generally speaking, have been regarded until recently as being in foreign lands. It has taken the shocks of war to teach men the now obvious fact that human beings are so interdependent that no group can isolate itself from the remainder, even on the lofty peaks of pure science. The Association, with its sections in the fields of both the natural and the social sciences and with its many affiliated societies from both fields, is ideally constituted to furnish opportunities for exploring the interrelations of science and society.

Several times in the past scientists have largely failed to recognize the tides in human affairs which they themselves have created. For example, when Charles Darwin removed man from his lonely and barren pedestal of a special creation, his contemporaries did not realize that he had ascribed to man all the rich qualities that flow in the varied streams of life and all its possibilities for change. Now when the applications of science have removed all the physical barriers that have hitherto separated peoples from peoples, let not the fact escape scientists that they have opened the gates to both Paradise and Purgatory. Which shall be humanity's fate now depends in large measure upon the ideals with which they inspire the world.

In order that the Association may function more effectively as an integrating agency for science and society during the war, after its close, and indefinitely in the future, this publication has been established by the Executive Committee. It enables the Office of the Permanent Secretary to communicate directly with *all* the members of the Association. This has been impossible, except by mail, because about sixty per cent of the members receive *Science* and about forty per cent *The Scientific Monthly*. Moreover, not many of the announcements that will appear in this bulletin will be appropriate for *Science* and none of them for *The Scientific Monthly*, both of which will continue to occupy the distinguished positions in American science that they have long held in the past. The new publication will supplement them and provide a new medium through

which the affiliated societies may make announcements of their programs and of their undertakings of general interest.

There is a labor and financial aspect of the establishment of this publication which merits a few comments. To send out through the mails a communication from the Office of the Permanent Secretary to all the nearly 24,000 members of the Association is so costly in labor and money that there is always pressure to refrain from doing so. Many of these desirable communications will appear substantially in this publication at much less cost. As a matter of fact, taking all the items of labor, envelopes, paper and postage into account, the cheapest mail service hitherto available to the Association for communication to all members is about eight times as costly as through this A.A.A.S. Bulletin.—THE EDITORS.

Cancellation of Ann Arbor Meeting

My dear Dr. Moulton:

I cannot tell you how much I regret the necessity of withdrawing our invitation to have the summer meeting of the American Association for the Advancement of Science held in Ann Arbor. Since we are going on the three-term plan in June, our facilities and our men will, we believe, be seriously taxed. We feel that the meeting could not be a real success if held here under these circumstances.

With kindest regards, believe me

Yours most sincerely,

(Signed) Alexander G. Ruthven

Dear Dr. Ruthven:

We regret very much that it has been necessary to cancel the meeting of the Association which was scheduled to be held in Ann Arbor beginning June 22. Our plans were well advanced and of course there will be disappointments. Under the conditions, however, there is no cause for complaint and we hope that at some future time the Association will hold a meeting as guest of the University of Michigan.

Very sincerely,

(Signed) F. R. Moulton

At a meeting held on March 15, the Executive Committee voted to cancel the meeting that was scheduled to be held at Ann Arbor next June 22–27, 1942.

Origin of the Association

On September 20, 1848, the American Association for the Advancement of Science held its first regular meeting in the library room of the Academy of Natural Sciences, in Philadelphia. It followed the founding of the American Philosophical Society, of Philadelphia, and the American Academy of Arts and Sciences, of Boston, by nearly sixty years. It followed several attempts to establish national scientific societies, one of the most ambitious of which was the "Columbian Institute for the Promotion of Arts and Sciences," which was launched in 1816. Although the officers and members of this society included such distinguished men as John Quincy Adams, Daniel Webster, Henry Clay and Edward Everett, it ceased to function within ten years.

In 1844 the National Institution for the Promotion of Science was organized and held a flamboyant meeting in Washington at which the opening address was delivered by John Tyler, President of the United States. Senator Robert J. Walker, of Mississippi, delivered the principal address, and the distinguished political figures who served as chairmen of the successive sessions included John Quincy Adams, then a member of Congress from Massachusetts, Senator Woodbury of New Hampshire, J. R. Ingersoll of Pennsylvania, and John C. Spencer, Secretary of War. The society never held another meeting.

Against a background of such failures the Association was founded. It grew out of an organization of scientists, the Association of American Geologists and Naturalists, which, at its last meeting in September, 1847, voted to transform itself into the American Association for the Promotion of Science, a society "designed to embrace all laborers in Physical Science and Natural History." A year later it ceased to exist and was succeeded by the American Association for the Advancement of Science, its name exactly paralleling that of the British Association for the Advancement of Science. Moreover, its original constitution was patterned after that of the British Association and until about 1900 its organization and programs were generally similar to those of the British Association.

Mr. William C. Redfield was elected as the first president of the Association, its original membership being 461. The scientific program of the first meeting consisted of three papers on fossils, a communication on ocean winds, a general evening session at which Benjamin Peirce presented a paper On the General Principles of Analytic Mechanics, followed by Louis Agassiz with a paper On the Classification of the Animal Kingdom. In addition, there were sessions daily of the two sections of the Association, namely, the Section of Natural History, Geology, etc., and the Section of General Physics, etc. In all, about sixty papers and notes were presented at the meeting.

As one now looks back across more than ninety years to the first meeting of the Association, the time seems long and the distance great. The growth of the Association and the achievements in science in the interval have been so great that it might be carelessly assumed that science began about a century ago. But there were scientists of the first order of greatness long before the Association was founded—Galileo, Newton, Harvey, Huygens, Linnaeus, Dalton and Cuvier, to mention only a few—and great institutions and academies had been established—universities at Bologna (1100), Paris (1100), Oxford (1167), Cambridge (1284), Vienna (1364), and among scientific societies the Accademia dei Lincei (1603), the Royal Society of London (1662), Académie des Sciences and Académie Française (1666), Preussiche Akademie der Wissenschaften (1700), Royal Swedish Academy (1741) and Académie Impériale des Sciences de Saint-Petersbourgh (1779), to mention only the most celebrated. In the midst of present storms it might be well to remember that there were many dark hours down through these centuries when good men feared civilization was about to die.

College Preparation for Aviation Training

An officer of the U. S. Army Air Corps from Kelly Field training center, San Antonio, Texas, attended the meeting of the Association held in Dallas last December for the purpose of discussing the preparatory training necessary for aviation cadets and of inviting the assistance of scientists in providing that training. The Army Air Corps in Washington very shortly thereafter asked the Association to nominate a committee to be appointed by the Air Corps to visit one of its training centers and to report on the scientific aspects of the training and on the possibilities of pre-training in the universities, colleges and secondary schools of the country. A committee was nominated and appointed; it promptly undertook the investigation and made recommendations which were officially approved by the Air Corps. The members of the committee were Professors William L. Hart, of the University of Minnesota, William M. Whyburn, of the University of California at Los Angeles, and Charles C. Wylie, of the State University of Iowa.

Instead of reviewing the report of the committee, which has been widely distributed to educational institutions, it will be more useful at present to comment in general terms upon the need for preliminary training for aviation cadets and upon the magnitude of the problem it presents to scientists in certain fields and to the institutions with which they are connected.

Air Service Personnel

The operating personnel of the air service consists of ground crews and combat crews. The ground crews are not under consideration here. The air crews vary greatly with the type of plane. In a single-seater combat plane or in a dive bomber, there is only the pilot. The crew of bombing planes, however, consist of pilots, navigators, bombardiers and gunners, the last being enlisted men having about the same general qualifications as gunners among ground forces. They also are not under discussion at present.

With the present distribution of planes between fighter planes of various types and bombers of various types, the crews average about three men per plane, exclusive of gunners. The larger the percentage of bombers, especially long distance bombers, the greater the average number of men per plane. In view of the fact that the United States will require bombing planes adjacent to and over the Atlantic Ocean from Trinidad and Panama to Iceland, and over the Pacific Ocean from Panama to the Bering Strait, and perhaps beyond, and great numbers in Australia for operations over the East Indies, it is probable that within a year more than three men per plane will be required, in addition to gunners.

At present about five pilots are required, on the average, for each navigator and each bombardier. If the percentage of bombing planes increases, the percentage of navigators and bombardiers will also increase. In the Army Air Service, the pilots and navigators are distinct members of the crew; in the Navy, all pilots are navigators and all navigators are pilots.

Physical and Mental Requirements

Probably no other demands on the human physique are as severe as those on the crews of combat planes. In referring to those who are exploding their energy in combat, draining it unceasingly in long flights, freezing at great altitudes, trusting to gas tanks for their life-sustaining oxygen, plunging from the substratosphere almost to the surface, and whose very lives hang continually upon slight margins of accuracy of judgment and quickness of action, as well as upon Fate, such words as strength, endurance, coordination and courage, in their ordinary

meanings, are quite inadequate. It is clear why only those between the ages of 18 and 26 are eligible for the air service, and why only a part of those within these age limits can qualify.

It is, however, the mental and educational qualifications that are of chief interest in this connection. More than ordinary intelligence is required to understand and operate such complicated and delicate machines as airplanes. A high order of intelligence is necessary in order to master in the available time the science that is necessary for a navigator, including such subjects as the celestial sphere and spherical trigonometry, the principal bright stars and their diurnal motions, methods of rapid and accurate computation, the use of sextants and related instruments, dynamics of rigid bodies and the elements of aerodynamics, the fundamentals of meteorology, and radio and photography. Obviously a good knowledge of all of these subjects is necessary in order to guide safely a plane hundreds and perhaps a thousand miles in darkness, in storms, through winds, over misty seas to unknown targets and then return. It is not surprising that the communiques often report that "five of our bombers did not return." The Navy has always required four years at Annapolis and months of experience at sea in order to teach a man to navigate a ship. Now both the Army and the Navy must teach tens of thousands of young men in a few months to perform tasks that are as difficult.

Magnitude of the Problem

Early in January the President announced that 50,000 combat planes would be produced in the United States in 1942 and more than 100,000 in 1943. The wheels of vast industry are now turning ever more rapidly and there is good reason to believe that the President's prediction will be fulfilled. On the basis of the estimate of an average of three men per plane, in addition to the gunners, 150,000 men trained for air service will be required during this year and 300,000 in 1943. At present both the Army and Navy have enough aviation cadets in training to exhaust the capacities of their training centers and enough in reserve to meet their requirements in the near future.

But the United States is just now getting into production on a quantity scale. The rate of demand for aviation cadets, especially in the Army, will soon be doubled and quadrupled. Where will the several hundred thousand young men with the necessary education be found to qualify for the aviation courses in the Air Corps training centers? They do not now exist. How will the Army and Navy give several hundred thousand young men the preliminary courses in science necessary to take their training for air service? They do not have the necessary physical facilities nor the personnel for such an immense task, and they cannot provide them in the time available.

A Task for Universities, Colleges, and Secondary Schools

The science required as prerequisites for aviation cadets is pretty largely included, here and there, in various science courses that are being given in educational institutions But it is not being given with the requirements for aviation in view. Even if it were, it would be too slow because now the courses that include the necessary material are usually spread over two years. With the urgency of the requirements in mind, the committee of the Association prepared an outline of a course designed for the purpose under consideration to be given in one semester at the most, and the Army Air Corps approved the course.

Can the universities and colleges step into the breach? The answer cannot be given without a little arithmetic, such as might be necessary for an airplane navigator in order to chart the way to his base when he is over the sea with the gasoline in his tanks running low. As was stated, 150,000 men will be required in 1942 and 300,000 in 1943. Let it be assumed that the universities and colleges will undertake to give half of them, or 225,000, the necessary semester's work during the three semesters remaining before the close of 1943, an average of 75,000 students each semester. With 30 students in a class, 2500 classes will be required. That number will strain the capacity of universities and colleges to the very limit, both for facilities and for teaching forces.

Even if the universities and colleges can handle the load, will the students be available? The number of men normally entering the universities and colleges of the country each year does not exceed 300,000. About half of them will be excluded from aviation courses because of physical defects. An appreciable per cent will be disqualified for other reasons. If all the remaining take the science courses and pass they will be in demand for many other purposes than aviation—as deck officers on ships, lieutenants in the Engineer Corps, lieutenants in the Signal Corps, scientists in industrial laboratories, and instructors in schools, colleges and military train-

ing centers. On this count the number remaining for air service will be far too few.

Although many scientists, especially physicists and chemists, are making great contributions to the government's war effort, there are still thousands of scientists in other fields who are regretting that they are not contributing directly to national defense. This pre-training for aviation courses provides something, indeed much, those in the physical sciences can do, and the need is most urgent. Many educational institutions are doing a great deal in support of the government, but now is the time to talk only of what needs to be done. These institutions with plants that have cost hundreds of millions of dollars must do much more. They and their faculties must not be deterred by difficulties such as scarcity of funds or overwork. Scientists must not be discouraged or falter. They must prove that they are worthy of the privileges they have enjoyed and of the relatively sheltered lives they have been able to lead. They have prided themselves on their lofty purposes and on the clarity of their understanding. Now they must use these high qualities to direct their energies tirelessly in defense of civilization. If they do not, then it may be necessary to say again, and perhaps for the last time, "Too little and too late!"

The National Nutrition Program

A few weeks ago Dr. M. L. Wilson, Director of Extension Division, U. S. Department of Agriculture, and Assistant Director in Charge of Nutrition, Office of Defense Health and Welfare Services, invited the Association to participate in the Federal government's program of disseminating information about problems of nutrition. The Association accepted the invitation and has been exploring the possibilities of participating in the work.

It is at once evident that the problem of national nutrition has various aspects. First, there are investigations in metabolism, the utilization of proteins, fats and carbohydrates, the roles of vitamins in nutrition and the need for certain minerals, such as calcium. Obviously these are all problems for specialists. Moreover, they are being taken care of competently by a committee of the National Research Council and by agencies of the government, such as the U. S. Public Health Service. They are continuing problems of great difficulty and profound importance that probably will not be completely and finally solved for an indefinite time in the future.

In the meantime more than 132 million inhabitants of the United States face the problems pertaining to their daily food, the problems of nearly 400 million meals each day. Their solutions of these problems depend upon inherited customs, individual tastes and prejudices, costs, availabilities, facilities for preparation, advertising of various foods, superstitions about foods, and countless food fads. Examinations of recent selective service men prove that the results have been far from satisfactory, almost fifty per cent having been rejected for physical defects, many of which are ascribed by experts to faulty diets. Long-period health surveys of limited areas, such as that of Hagerstown, Md., have confirmed the conclusions reached from examinations of young men after they have reached maturity.

Obviously there is an important problem before the country not only for the war period but for all the future. How can it be solved, at least partially? Once illiteracy was widespread. It has been almost completely removed by universal interest in education and by generous support of little red schoolhouses all over the country. Evidently mass deficiencies of any kind can be cured only by mass activities. For this reason Dr. Wilson has asked the Association, with members all over the United States, to assist in his program.

It is not expected that the members of the Association will undertake to become experts in the chemistry of nutrition. But it is hoped that they will assist in dispelling superstitions about diet, inspiring sane attitudes toward foods and disseminating elementary information about nutrition similar to that which, in recent years, has largely transformed the feeding of domestic animals throughout the country, often with astonishing results. The human problem is, of course, more difficult because there are prejudices to be overcome and economic problems to be solved. The first step will be the preparation of an elementary nutrition syllabus by Dr. Wilson's office for the information of individuals and for the use of those who will give discussions of simple problems of diet in schools, clubs, societies, fraternal orders and other meetings.

In order to obtain concrete experience as a basis for possible activities by members, the Association will participate in an experiment that is under development by the office of Dr. Wilson at Baltimore in connection with the Maryland Academy of Science. Baltimore is a great industrial city and the plan is to disseminate information among workers and their families. If the experiment is successful—and perhaps even if it is not successful—it will be reported. If it should be successful, it will set a pattern for service of the highest order of importance.

Annual Meeting of the Southwestern Division

On next April 27, 28, and 29, the annual meeting of the Southwestern Division of the Association will be held at Las Cruces, N. Mex., on the campus of the New Mexico State College of Agriculture and Mechanic Arts. Las Cruces is in the Mesilla Valley of the Rio Grande, 44 miles north of El Paso, Texas, and Juarez, Mexico.

The presentation of scientific papers under the several sections of the Division is invited, and for participation neither membership in the Association nor residence within the boundaries of the Division is required. The final date set for the receipt of titles is March 30.

Field trips and excursions will be arranged to meet the interests of those attending the meeting. Old Mesilla and the ruins of Forts Selden and Fillmore are places of historical interest. The Sunken Mesas, Lava Flows, and the White Sands National Monument are features of interest to both geologists and biologists. The Conkling Cave, Jornada Experimental Range and the industrial and other interests of El Paso and Juarez may be visited within a few hours. A trip to the Carlsbad Cavern requires an entire day.

Section sessions are scheduled throughout the meeting at various times. The thirteenth John Wesley Powell lecture will be delivered Tuesday evening, and the address of the retiring president, Dr. Wm. M. Craig, will be delivered Wednesday evening following the Division banquet. Dr. Craig will speak on "The Role of Spectroscopy in National Defense."

Registration and headquarters will be at Hadley Hall, the administration building of the College, located in the center of the Campus.

The officers of the Southwestern Division are Dr. Wm. M. Craig, *President,* Texas Technological College, Lubbock, Texas; and Dr. Frank E. E. Germann, *Executive Secretary-Treasurer,* University of Colorado, Boulder, Colo.

The AAAS-Gibson Island Conferences

Four years ago Dr. Neil E. Gordon, secretary of the Section on Chemistry, organized two special research conferences on chemistry, each five days in length, which were held at Gibson Island, Md., August 15–26, 1938. From that small beginning the conferences have increased to ten for the coming summer, they are participated in by leading chemists from universities and industrial laboratories, and a permanent home for them has been purchased with the aid of generous gifts of over $20,000 from industrial companies during the past nine months.

Such a success as the Gibson Island research conferences always rests on sound plans and efficient management. The basic assumption underlying their organization was that leisurely conferences of leading investigators in important fields of research would contribute greatly to the advancement of science. The first two conferences proved the assumption was sound. Dr. Harold C. Urey was chairman of the first conference. The subject for discussion was "Relation of Structure to Physiological Action." In the five days of the conference only five papers were presented, but they were comprehensive discussions by eminent authorities in the field: Drs. Walter H. Hartung, John H. Speer, Arthur C. Cope, Edward A. Doisy and D. W. MacCorquodale, and George W. Raiziss. Abundance of time was available for formal and informal discussion of what was conjectured, as well as of what was known. The conference during the following week was as successful as the first. The pattern was set for the conferences—subjects of current importance, eminent participants, limited audiences of experts, extensive discussions, agreeable surroundings and time for recreation.

The second year three conferences were held, six were held the third year, eight the fourth, and ten will be held this coming summer, the first beginning on Monday, June 22. Details about them can be obtained from Dr. Neil E. Gordon, Central College, Fayette, Mo.

In the early years of the conferences, those attending them were housed at the Gibson Island Club. A few months ago the Association purchased a large house beautifully situated among trees on the highest ground on the island, and by remodelling and refurnishing it, made it capable of housing most of the sixty participants to which the conferences are limited. Meals will be obtained at the club as heretofore.

The National Garden Program

A coordinated garden program was launched at the National Defense Garden Conference at Washington, D. C., December 19–20, 1941. This program was first developed by the Garden Committee of the U. S. Department of Agriculture and the coordinating sub-committee of the nutrition committee of the Office of Defense Health and Welfare Services, Federal Security Agency. The program is made up of four large divisions —farm vegetable gardens; farm fruit gardens; city home, community plot, and school gardens; and conservation of lawns, flowers, and shrubs. It is intended to meet not only emergency and

wartime needs but also the longer-time garden needs of the country.

A Million More Farm Gardens

When Secretary Wickard announced the Food for Freedom program last September, he included a goal of 5,760,000 farm gardens, an increase of 945,000 gardens over the number reported in the 1939 Census. This goal calls for better gardens as well as for more farm gardens; hence, the recommendations carried in the National Garden Program emphasize selection of vegetables that will help most in the improvement of nutrition and health. Special emphasis is placed on the green leafy vegetables, yellow vegetables, and tomatoes, the main objective being to get more vitamin A and vitamin C in the diets of farm people.

The National program recommends vegetables adapted to long seasonal use and to a variety of uses, and involving the minimum cultural, storage, insect, and disease problems. The selected vegetables should provide a succession of fresh products through the major part of the year as well as an adequate supply of vegetables suitable for canning and storing. To reach farmers who ordinarily do not have much of a garden the National program recommends limiting the kinds of vegetables to 8 or 10 common varieties.

To that end, the National Garden Program lists the following vegetables as a guide in helping farm people to make appropriate selections: Lettuce, cabbage, kale, turnip greens, chard, collards, spinach, turnips, parsnips, beets, carrots, rutabaga, tomatoes, bush and pole beans, lima beans, peas, onions, radishes, cucumbers, Hubbard squash. It is assumed that farm families will also produce enough white potatoes or sweet potatoes or both for home use throughout the year.

Community and School Gardens

Town, suburban, and city gardeners the country over are showing a tremendous interest in vegetable gardening, and it has been the problem of the Department to try to guide and direct their activities so there would not be a repetition of the war garden fever of the first World War, with a resultant wastage of seed, fertilizer, and garden supplies, and an unnecessary tearing up of backyards, lawns, ornamental plantings, and even parks and other public grounds. However, the Department believes that suburban and town gardeners who have fertile soil and good gardening facilities, and who have been growing vegetables, may well increase their plantings with a view to providing not only their own vegetables but some surplus for poor families, welfare institutions, and school lunches.

Community plot and school gardens should be encouraged for the same purpose, particularly to supplement school lunches, and in some cases even to be the beginnings of school lunches. Last year about 9,000 gardens contributed to school lunches and many more are needed.

City, town, and suburban people who usually do not grow vegetables should not do so now because of any fear of a shortage of vegetables, fresh or canned, or because of a belief that their contributions from such gardens will in any large measure add to war food supplies. The Secretary of Agriculture has said, "I do not think the Nation will benefit at present from a widespread all-out campaign intended to put a vegetable garden in every city backyard or on every vacant lot."

Need More Farm Fruit Gardens

We need more farm fruit gardens. The results from any greater planting of fruit on farms will, of course, not be as immediate as from farm vegetable gardens, but it was thought that the time was ripe for stimulating a much greater interest in growing fruit for home needs. No farm and no suburban home with a small acreage should be without a fruit garden, the products of which may contribute greatly to healthful living and enjoyable meals. It seems most desirable also that a taste for fruit, and a knowledge of the healthfulness and variety it gives to the diet, should be developed that the habit may endure.

Response Exceeds Expectations

The response to the national garden program has exceeded all anticipations. At the suggestion of Secretary of Agriculture Wickard and Mr. Paul V. McNutt, Director of the Office of Defense Health and Welfare Services, Governors over the country have issued proclamations, each calling for a special garden week in his State, most of them in March. A National Advisory Garden Committee has been appointed which, under the chairmanship of Governor Cooper, of Tennessee, is supporting the program. State garden conferences and meetings have been held in practically every State, many of them patterned after the National Garden conference. At these conferences State Victory Garden Programs were planned by State Extension workers and representatives of all other agencies and groups in a position to further the program.

In many of the States similar county Victory Garden conferences are being held. In Nebraska,

for example, county Victory Garden plans were laid at meetings of Federal, State, county, farm, school, church, civic, and other groups. A small executive committee was appointed in each county and local garden leaders were named for every 8 or 10 families. The local leaders are being trained by county Extension Agents and will sign up the farm families in their neighborhood for Victory Gardens, hold neighborhood garden meetings, and otherwise spread information about the garden program and help farmers in the neighborhood to develop good gardens.

The program in Virginia is being carried on in a similar manner, with each local leader agreeing to get in contact with five or six families who have never grown a good garden, preside at neighborhood garden meetings, etc.

Whether or not the goal of 5,760,000 farm gardens will be reached this year, we are sure that there will be thousands of new and better gardens—victory gardens that will help meet the Nation's food needs and produce health, strength, and morale for the folks on the home front.—H. W. Hochbaum, Chief, Division of Field Coordination, Extension Service, U. S. Department of Agriculture.

Publication of Liebig Symposium

Publication No. 16, entitled Liebig and After Liebig, with the subtitle A Century of Progress in Agricultural Chemistry, was a symposium of papers presented before the Sections of Chemistry and Agriculture of the American Association for the Advancement of Science at Philadelphia on December 30, 1940, in commemoration of the hundredth anniversary of the publication of Liebig's Organic Chemistry in Its Applications to Agriculture and Physiology. This volume is in the bindery and will soon be ready for distribution at a prepublication price to members of the Association of $2.00 per copy till April 15.

The Table of Contents of the volume is as follows:

Introduction

Justus von Liebig—Man and Teacher. Charles A. Browne.

I. Organic Chemistry, Enzymes and Nutrition

Liebig's Influence in the Promotion of Agricultural Chemical Research. Henry R. Kraybill.

Liebig and the Chemistry of Proteins. Hubert H. Vickery.

Liebig and the Chemistry of Enzymes and Fermentation. Arnold K. Balls.

Liebig and the Chemistry of Animal Nutrition. Paul E. Howe.

II. Soils, Fertilizers and the Mineral Requirements of Plants

Liebig and the Chemistry of the Soil. Richard Bradfield.

Liebig—The Humus Theory and the Role of Humus in Plant Nutrition. Selman A. Waksman.

Liebig and the Chemistry of Mineral Fertilizers. Harry A. Curtis.

Liebig and the Law of the Minimum. Charles A. Browne.

Liebig and the Mineral Requirements of Plants as Indicated by Means of Solution Cultures. Burton E. Livingston.

The following Foreword describes briefly the symposium:

"In character and purpose this volume on A Century of Progress in Agricultural Chemistry is typical of the symposium publications of the American Association for the Advancement of Science. It deals with a subject of great importance and of wide general interest; it is authoritative, comprehensive and thoroughly documented; and it makes available in convenient form the history of one of the most significant developments in agricultural science.

This symposium was presented at the third Philadelphia meeting of the Association on December 30, 1940, one hundred years after the publication of Justus von Liebig's Organic Chemistry and its Applications to Agriculture and Physiology. The program was initiated and organized by Dr. Charles A. Browne, and the contributions to it were prepared for publication by a committee consisting of Drs. Charles A. Browne, Richard Bradfield, and Hubert B. Vickery. The readers of this volume will owe much to the members of this committee for the work they have done in producing a coordinated survey of a subject of deep theoretical interest and equally great practical importance, and to the eminent specialists for their contributions.

Like other symposia published by the Association, this one not only reviews an extensive literature, but describes current opinions and practices and new methods of investigation that are now being developed. The dramatic story is told of the profound revolution in agricultural science that was brought about by the dominating leadership of a most gifted, yet often mistaken, chemist; by the polemics that were aroused by the fierce hostility of his criticisms; by the world-wide propagation of his doctrines through his numerous books and popular writings, and by the many loyal pupils of his school; and by his great influence in opening up new fields of knowledge in soil science, in plant and animal nutrition, and in the theory and manufacture of chemical fertilizers. As in other scientific developments, each discovery in these various subjects has raised an ever-widening variety of new problems. The book closes with a broad and well-documented survey of plant nutrition experiments by means of solution culture, a procedure that still promises to be the surest road to sound basic conclusions.—F. R. Moulton."